

REMARKS

The invention is directed to ethylene-vinyl acetate based hot melt adhesive formulations that can be applied at low temperatures (i.e., 200°F to 300°F). The adhesive compositions of the invention, which exhibit good heat stress values and cold tolerance, comprise from about 5 to about 60 wt % of ethylene-vinyl acetate copolymers having a vinyl acetate content of from about 30 to about 50 wt % and a melt index of from about 700 to about 4000 dg/min., from about 30 to about 60 wt % of a terpene, modified terpene and/or terpene phenolic tackifier, and from about 15 to about 55 wt % of a wax having a melting point of 125 to 180°F.

Claims 1, 4-9, 11, 14, 16, 17, 18 and 20 stand finally rejected under 35 U.S.C. § 102 (b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 (a) as obvious over Kosaka *et al.* (U.S. Patent No. 3,944,695). Applicants again disagree.

Kosaka discloses a heat printing sheet. The sheet comprises a substrate having sheet having coated thereon a heat transferable composition, i.e., the printing sheet is prepared by coating a base with a molten printing composition. The printing composition comprises 10-60 % by weight of a tackifier, 5-50% by weight of a wax, 10-60% by weight of an ethylene vinyl acetate copolymer that contains 5-50% by weight vinyl acetate that has a melt index of 4-1000g/10min, 5-40% filler and a pigment, which components are melt blended together to form a printing composition.

While Kosaka broadly discloses and claims that the ethylene vinyl acetate copolymer be present in amounts of from 10-60% and contain 5-50% by weight vinyl acetate and have a melt index of 4-1000g/10min, preferred for use is an ethylene vinyl acetate copolymer having a melt index of 15-400g/10min (col. 1, lines 61-63). None of

the eight examples use an EVA copolymer component required for use in applicants' claimed invention, i.e., 30-60 wt % EVA (30-50 wt % VA, MI 700-4000). See examples 1-8, which comprise:

Example 1: 40 wt % EVA (28 wt % VA, MI 150)
Example 2: 40 wt % EVA (15 wt % VA, MI 400)
Example 3: 30 wt % EVA (30 wt % VA, MI 24)
Example 4: 20 wt % EVA (30 wt % VA, MI 600)
Example 5: 30 wt % EVA (7 wt % VA, MI 42)
Example 6: 20 wt % EVA (24 wt % VA, MI 70)
Example 7: 25 wt % EVA (35 wt % VA, MI 240)
Example 8: 25 wt % EVA (35 wt % VA, MI 240)
Example 9: 40 wt % EVA (40 wt % VA, MI 60)

Moreover, while Kosaka discloses that the printing composition comprise comprises 10-60 % by weight of a tackifier, there is no disclosure or suggestion that would led the skilled artisan to use about 30 to about 60 wt % of a terpene, modified terpene and/or terpene phenolic tackifier with an EVA component comprising 30-50 wt % of VA and having a MI of 700 to 4000. The compositions of Kosaka comprise:

10 - 60% by weight of at least one tackifier selected from the group consisting of terpene resins, hydrogenated cyclopentadiene resins, phenol resins, styrene-olefin copolymers, .alpha.-methylstyrene-vinyltoluene copolymers, rosin-polyol esters such as rosin glycerine esters, rosins of pentaerythritol esters, hydrogenated rosins, hydrogenated rosin-polyol esters, rosins of maleic anhydride polyesters and derivatives thereof, and disproportionated rosins. Col. 1, lines 38-46.

Reference is also made to the paragraph bridging cols 1 and 2 of Kosaka:

The tackifiers which are used in the printing composition of the invention are preferably terpene resins such as a β -pinene polymer having a molecular weight of 500 - 5000, hydrogenated cyclopentadiene resins having a molecular weight of 500 - 5000, dipentene polymers having a molecular weight of 1000 - 3000, phenol resins of a molecular weight of 300 - 3000, styrene-olefin copolymers having a molecular weight of 500 - 5000, and α -methylstyrene-vinyltoluene copolymers having a molecular weight of 500 - 5000. *It is especially preferable to combine a rosin*

tackifier such as a rosin-polyol ester, a hydrogenated rosin, or a hydrogenated rosin-polyol ester with the other tackifier. (Emphasis added).

There is no disclosure or suggestion in Kosaka that would lead the skilled artisan to use a tackifier containing at least 30 wt % of a terpene, which is required for use in applicants' invention.

The hot melt adhesive composition of applicants' claim 8 comprises:
about 35 weight percent of an EVA copolymer (about 40 wt %VA and MI 1,000)
about 30 weight percent of a terpene, terpene phenolic, and/or modified terpene
about 5 weight percent of at least one additional tackifier, and
about 30 weight percent of a wax.

There is no motivation in Kosaka to use this amount of EVA, tackifiers and wax, which would leave little if any filler or pigment.

Claim 20, directed to a carton, case or tray formed using an adhesive of the invention, is clearly neither anticipated nor obvious over Kosaka. The formation of a carton, case or tray is not disclosed by Kosaka and, as such Kosaka does not anticipate the invention of claim 20. There is no suggestion that the composition of Kosaka can be used to form a case carton or tray. As such the claimed case, carton and tray is not obvious.

Withdrawal of the rejection of claims 1, 4-9, 11, 14, 16, 17, 18 and 20 as anticipated by or, in the alternative, under as obvious over Kosaka is requested.

Claims 10, 13, 15 and 18 under 35 U.S.C. § 103 (a) as being unpatentable over Kosaka *et al.* (U.S. Patent No. 3,944,695) in combination with Kosaka *et al.* (U.S. Patent No. 3,896,069). Claims 10, 13, 15 and 18 required that the tackifier be a terpene phenolic tackifier. The examiner urges that it would have been obvious to use a terpene phenolic

tackifier since Kosaka '069 discloses use of such tackifier in hot melt adhesive compositions. Applicants disagree.

The invention of Kosaka '069 is directed to a hot melt composition that contains a modifier prepared by oxidizing a low molecular weight polypropylene having an acid value of 1-20 in a ratio of 1/100 – 10/10 by weight to the ethylene-vinyl acetate copolymer. All exemplified compositions contain oxidized low molecular weight polypropylene component and an ethylene vinyl acetate polymer having a melt index outside the scope of applicants claimed composition. None of the examples disclose use of terpene or terpene phenolic tackifier, and there is no teaching or suggestion to use such tackifiers in the amount claimed by applicants. The cited prior art neither suggests, nor provides any motivation to modify or combine the reference teachings.

Applicants submit that the examiner has failed to establish a *prima facie* case of obviousness. Withdrawal of the Section 103 rejection over the combined disclosures of Kosaka '695 and Kosaka '069 is requested.

Claims 1, 4-11 and 13-20 are rejected under 35 U.S.C. § 102 (b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 (a) as obvious over Kosaka *et al.* (U.S. Patent No. 3,896,069). Applicants disagree.

Kosaka '069 discloses a hot melt composition that contains a modifier prepared by oxidizing a low molecular weight polypropylene having an acid value of 1-20 in a ratio of 1/100 – 10/10 by weight to the ethylene-vinyl acetate copolymer. In addition to the EVA and oxidized a low molecular weight polypropylene the composition must have at least one of a tackifier, a wax or asphalt. All exemplified compositions contain oxidized low molecular weight polypropylene component and an ethylene vinyl acetate

polymer having a melt index outside the scope of applicants claimed composition. None of the compositions disclose use of an ethylene vinyl acetate copolymer, terpene phenolic tackifier and wax, as claimed by applicants, and there is no disclosure suggesting such combination. While the examiner refers to Run 1 (believed to be example 1), there is no wax in this composition. Run 6 contains a wax, but no tackifier. None of the examples disclosure use of a terpene tackifier, let alone in combination with a wax.

clearly would not contain the oxidized low molecular weight polypropylene modifier described by Kosaka '069 for use in preparing an adhesive.

Applicants submit that Kosaka '069 neither anticipates nor renders obvious the invention of claims 8, 13, 17, 18, 19 and 20. Withdrawal of the Section 102/103 rejection over Kosaka '069 is requested.

Claims 1, 4-7, 9, 10, 13, 17, 18 and 20 are rejected under 35 U.S.C. § 102 (b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 (a) as obvious over Liedermooy *et al.* (U.S. Patent No. 5,500,472). Applicants disagree.


Liedermooy disclose a hot melt adhesive composition, specifically, an ethylene n-butyl acrylate based hot melt adhesive. The adhesive of Liedermooy, in addition to ethylene n-butyl acrylate copolymers may optionally contain up to 20% by weight of another polymeric additive, such as ethylene vinyl acetate containing 10-40% by weight vinyl acetate. There is no disclosure or suggestion that a low application temperature hot melt adhesive may be prepared using an ethylene vinyl acetate copolymer as claimed by applicants (5-60% EVA with 30-50% VA), let alone formulating a hot melt adhesive comprising 35 to 60 % by weight of an ethylene vinyl acetate copolymer and required for used in claim 8 (35 wt % EVA), claims 11 and 19 (35-45 wt % EVA), claim 14 (35-60 wt

% EVA). Applicants submit that the claimed invention is not anticipated by Liedermooy. Liedermooy fails to disclose an ethylene-vinyl acetate based low application temperature hot melt adhesive containing a terpene phenolic tackifier, let alone use of the tackifier is amounts of 30 to 60 wt %. Liedermooy provides no disclosure that would motivated the skilled artisan to use amounts of ethylene-vinyl acetate in excess of 20% by weight. Applicants' claimed hot melt adhesive composition is not anticipated by Liedermooy. Liedermooy provides no suggestion to use the components claimed by applications.

Applicants submit that Liedermooy neither anticipates nor renders obvious the claimed invention. Withdrawal of the Section 102/103 rejection over Liedermooy is requested.

Favorable and early action solicited.

Respectfully submitted,


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